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NEW SPECIES OF TERTIARY FOSSILS FROM ALABAMA, MISSISSIPPI AND FLORIDA.

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The following species are principally Eocene; descriptions of two species have already appeared in *THE NAUTILUS* and they are now figured for the first time. One new species from the Oligocene of Oak Grove, Fla., has been added. The Oligocene deposit of Oak Grove has been pierced by a deep well near Mobile, Ala., and no doubt it will be found still further to the westward. I am indebted to C. W. Johnson, of the Wagner Free Institute of Science, for comparisons with types in the Academy of Natural Sciences, Philadelphia. All the drawings have been executed by Dr. J. C. McConnell, of the Army Medical Museum, Washington, D. C.

PLEUROTOMA (DRILLIA) CASEYI n. sp. Pl. III, fig. 1, 2.

Shell fusiform, whorls ten to eleven, first four smooth, apex pointed, the balance of the whorls nodular with a connecting line situated at the periphery. About nine nodes on each whorl. The balance of the spiral sculpture consisting of close-set, rounded lines, which are stronger on the lower part of each whorl; suture nearly concealed by a strongly raised and rounded band which is wavy and closely appressed. On the humeral area the spiral lines are cut by fine curved lines formed by the former retral sinus, sinus nearly semi-circular. Canal open and slightly spatulate.

Length 11 mm., width 3 mm.

Localities: Red Bluff, Miss., Byrams Ferry, Pearl Rv., Miss., and Vicksburg, Miss.

Resembles *Drillia texanopsis* Harris, but is carinated at the periph-

ery, more strongly striated and with a deeper retral sinus. Maj. Thos. L. Casey, U. S. Engineers, has sent me examples from the upper part of the bluff at Vicksburg. The shell is named in his honor.

CANCELLARIA ANNOSA Aldr. Pl. III, fig. 3.

This species was described in THE NAUTILUS, Vol. XI, p. 97, January, 1898.

CYPRÆA NUCULOIDES n. sp. Pl. III, figs. 4, 5 and 6.

Shell broadly ovate, rounded, globose, extremities slightly produced, surface smooth, basal callus heavy and extending upwards about one-third on each side, base flattened, rounded into the aperture, resembling in this respect *C. pinguis* Con., but broader. Aperture rather narrow, denticulated.

Length 17 mm., greatest breadth 14 mm.

Localities: From the Claibornian at De Soto, Miss., McLeod's Mill, Miss., and Dubose's Mill, in West Alabama.

This species has a more flattened base than *C. spheroides* Con. and has a much heavier basal callus. The inner lip is smooth below the denticulations.

CLAVILITHES COLUMBARIS n. sp. Pl. III, fig. 7.

Shell fusiform, whorls ten, apex bulbiform, consisting of three whorls, the third constricted; the next four spirally striated and tuberculated, the last two strongly turreted and excavated below the sutural shoulder. Aperture small, constricted at posterior. Canal long, narrow.

Length of figured specimen 52 mm.

Localities: Claibornian of De Soto and McLeod's Mill, Miss., also in West Alabama, same horizon. This species approaches the form described by Harris as *Clavilithes humerosus* Con., var. *texasus*, but the size and extremely prominent shouldered whorls and the constriction below are peculiar. The figured example is the most perfect one obtained, but the shoulder is even more prominent in other specimens. On comparing this species with *C. longævus* Lamarck, I find it has one less embryonic whorl and a higher spire.

FISSURIDEA INFREQUENS, n. sp. Pl. III, figs. 8, 9.

Shell medium size, with broadly ovate periphery at base, rather depressed; substance of shell thin, foramen in anterior half, small and narrowly ovate.

Greatest breadth at base 22 mm., height 6 mm.

Locality : On the Chickasawhay River, three and one-half miles below Quitman, Miss., below the *O. sellæformis* bed, Claibornian.

This species differs from any Tertiary species known by the very thin shell in comparison with its size, and its very fine cancellation. The interior is filled with matrix.

OVULA SYMMETRICA n. sp. Pl. III, fig. 10.

Shell smooth exteriorly, spire produced, pointed and slightly spatulate, outer lip reflected, margined on the interior with numerous crenulations, and curved from spire to base. Aperture narrow, the inner margin of same denticulated near the spire and with three or four folds at base.

Length of figured example 9 mm.

Localities : McLeod's Mill and on the banks of the Chickasawhay River, three and a half miles below Quitman, Miss.; close to the Wautubbee beds of the Claibornian. This species differs from both *O. subtruncata* and *O. texana* of Johnson, and it has been kindly compared with the types by C. W. Johnson.

The specimen from the bluff below Quitman is broken, but if perfect would be about 13 mm. in length.

LATIRUS ELABORATUS n. sp. Pl. III, figs. 11, 12.

Shell small, whorls nine, the first three smooth, the fourth partly so, the balance nodular and crossed by spiral lines, the lines faint on the upper part of each whorl, becoming coarser below and developing plaits at the top of the transverse nodes; the younger whorls have two coarse spiral lines about their centre.

Suture irregular, closely appressed. Outer lip nodular within, the pillar lip smooth with the exception of two slight raised plaits about the centre of the aperture within; canal produced and but slightly curved.

Length of the largest specimen 11 mm., breadth $4\frac{1}{2}$ mm.

Localities : Matthew's Landing bed, at C. Jones, Wilcox Co., Ala., and in the Black Bluff clays near Grave Yard hill, Ala. The figures are of a small specimen and do not show the two plaits on the pillar lip because they are too far within the aperture.

ANOMIA NAVICELLOIDES Aldr. Pl. IV, figs. 13, 14.

For description see THE NAUTILUS, Vol. XI, p. 97, January, 1898.

CHAMA MONROENSIS n. sp. Pl. IV, fig. 15.

Shell of medium size, strongly rugosely plicated, lamellar. Upper valve with 6-8 leaves turned up to nearly a vertical at their ventral edges, each leaf covered with radial raised lines running in couples. Upper valve slightly convex, lower valve convex and inequilateral.

Resembles somewhat *C. corticosa* Con., but is smaller and more profusely ornamented. One lower valve has twelve leaves or corrugations. The upper valve is shown in the figure natural size.

Locality: The *O. sellæformis* bed, at White's Marl bed, Monroe Co., Alabama.

PECTEN (PSEUDAMUSIUM) SUBMINUTUS n. sp. Pl. IV, figs. 16, 17.

Shell minute, thin, surface smooth, not polished, valves rather flat, ears small, subequal in the right valve and unequal in the left. Fine rugose striæ on the ears of the right valve, vertical to the hinge line but not reaching it, but they run down over the submargin. One ear in the left valve with five or six radiating ribs, the other smooth; interior smooth, the cardinal margin cross striated.

Alt. 3 mm., lat. 3 mm. of the largest specimen.

Localities: Red Bluff, Miss., Jackson, Miss.

This little shell is evidently adult. It is probably found at Vicksburg also. It is not rare, closely resembles *Pecten Guppyi* Dall in form, but is smaller.

VERTICORDIA DALLIANA n. sp. Pl. IV, fig. 18.

Shell small, rather flat, surface ornamented with sharp curved ribs, in the present specimen thirteen in number, nine on the anterior, then a concave space as if one rib was missing, then two more ribs about the middle of the shell, then a wide concave space and then two more ribs, the last one almost at the margin. Ribs serrating the ventral margin. Cardinal tooth strong, erect; lateral tooth long and curved.

Breadth $2\frac{1}{2}$ mm., height from beak to base 2 mm.

Only one valve found; it is about the same size as *V. eocense* Langdon. The muscular scars are slightly impressed. Pallial line not perceptible.

VERTICORDIA SOTOENSIS n. sp. Pl. IV, figs. 19-21.

Shell small, strongly ribbed with twelve ribs, then a blank space, then two ribs near the margin, beaks blunt and rounded, ventral

margin serrated; lateral tooth long and curved. Interior very porcellaneous; muscular scars slightly impressed.

Localities: Claibornian of De Soto and McLeod's Mill, Miss., and also in West Alabama, same horizon.

This species closely resembles *V. dalliana* Nobis, but differs in the number of ribs and the absence of one space which appears on the other. It is also more rounded.

VERTICORDIA QUADRANGULARIS n. sp. Pl. IV, figs. 22, 23.

Shell stout, valves nearly quadrangular, rather thick and globose. Surface with numerous coarse, rounded ribs. Entirely covered with granulations; deeply excavated behind the beaks; possesses both cardinal and lateral teeth. Muscular scars are deeply impressed. Pallial line strongly marked. Internal basal margin showing the ribs.

Height and breadth equal, 7 mm.

Several valves were found. This species belongs to the Section *Haliris* Dall. The laterals are more strongly developed than in most forms of this section. It is distinct from *V. mississippiensis* Dall in having fewer and more rounded ribs and a more depressed lunular area.

CANCELLARIA BIFOLIATA n. sp. Pl. IV, fig. 24.

Shell small, whorls six, first two smooth, the third partially so, and the last three strongly cancellated. The ribs prominent, spiral lines alternately coarse and fine. Umbilicus open, pillar lip with two plaits. Shell appears to be turreted from the strong ribbing.

Length 7 mm., breadth 4 mm.

Locality: Oak Grove, Florida, Oligocene of Dall.

This little species differs from *C. mississippiensis* Con. in its less number of plaits on the pillar, its higher spire and open umbilicus.

A NEW CRASSATELLITES FROM BRAZIL.

BY WM. H. DALL.

Among some dead shells dredged by the U. S. Fish Commission in fifty-nine fathoms mud, east of Rio Janeiro, Brazil, were a number of valves which were inadvertently put away among a lot of *Astartes*. On overhauling the latter, lately, these valves were found